are clear from the ledges of the frame; if so, expose to the light. These operations need not be conducted in the dark, as silvered or blue papers are not excessively senstive.

Printing may be effected by the direct rays of the sun, or by diffused light—the nature of the negative determining the better course. Printing in the sun produces softness, while printing by diffused light or in the shade brings out strong contrasts. A strong hard negative will require a bright light, while weak, thin negatives must be printed from in the shade, or a diffused light. If a negative is very thin and transparent, place several folds of white tissue paper over the front of the printing frame, thus diffusing the light thoroughly. A print made in sunshine resists the bleaching action of the subsequent operations better than one made in shade. Therefore always over-print when using diffused light.

Exposure during printing must of course vary greatly; a very thin, delicate negative requiring but a minute, while a hard vigorous one may require hours.

To examine prints during exposure, hold the frame in the shadow of your body, unlock one end of the back, open it, bend back the paper, and examine carefully. Avoid touching the negative or the sensitized surface of the paper. When the shadows begin to bronze, the highest lights should be clear, or slightly darkened. If, in sun printing, the whites darken before the shadows are bronzed, it is proof of a weak negative, and the recourse is to shade printing. If, in shade printing, shadows are fully printed before detail in the high lights comes, it is proof that sun printing is needed. When the print is complete, it may be placed in a dark box or drawer until a number are ready for toning; they will not change if kept in the dark.

If the prints require trimming, do it before toning, being careful to trim them squarely and take off only sufficient to prevent ragged edges. The prints should then be thrown into clean water, and allowed to soak from ten to fifteen minutes, after which they are placed in a toning bath, and allowed to remain there until they assume a tint acceptable to the owner.*

They should then be placed in a bath of hyposulphite of soda, made by diluting some of the hypo bath already prepared for fixing negatives with an equal quantity of water, allowing them to remain therein five minutes in summer and ten minutes in winter. Hypo which has been used for negatives must not be used for prints. For fixing and toning use a shallow dish; a saucer will do unless the number of prints is large. The toning bath may be used until it refuses to perform its office. The hypo should be made fresh for each batch of about 25 prints.

The prints should now be washed very thoroughly in clear running water. The imperfect elimination of hypo will surely cause yellow tints in the whites, and finally fading—a most vexatious and mortifying occurrence, as well as an entirely unnecessary one. After washing, spread the prints between clean blotting paper, and place a book or weight upon them, until they are nearly or quite dry.

If the prints are to be mounted, it should be done at once after leaving the blotting pads, by laying them face down upon a clean blotting pad, and applying to their backs with a brush, clean properly-made flour paste, or gum arabic in water, allowing the print to swell slightly before adhering.

After mounting, prints are sometimes burnished by passing through a machine prepared for the purpose; the operation closes the fibres of the paper, giving great lustre, depth, and darkness to the picture. Special care must be taken with card mounts, as many contain traces of chemical matter, which will in time affect the prints.

Prints made on blue paper require longer exposure than those made on silvered paper. Print until the image is quite yellow, then throw the print into running water, and leave it to wash until the image is clear and blue, then dry in the blotting pads. No toning is necessary.

Tourists do not require the special arrangement of a dark room for developing, etc.; any dark closet will do by day, and any hotel room away from light will do by night. If camping out, go away from the camp fire into the darkness of the woods, and there perform all operations belonging properly to the dark room. A pitcher or bottle of water, or the running stream, will furnish all water necessary.

As landscapes are always seen with disadvantage under a noonday sun, so photographs taken under similar circumstances are mostly unpleasing; and as photography tends to exaggerated contrasts of light and shade, the result is all the worse. Many experienced landscape photographers therefore avoid bright days, and select those times when the sky is covered with white clouds, through which the sun's rays occasionally break.

In viewing a landscape in nature, the eye seizes and rests upon characteristic features, overlooking those that are secondary. A lens cannot do this, and, singularly enough, the eye will not do that with a picture which it will with real objects, but insists, as it were, that the picture should represent them as they should be. This fact is so conspicuously true, that examples are scarcely necessary. They will, however, continually present themselves to the photographer. Perhaps the view lies in a wild valley in the midst of hills, and the scene is not marred by the presence of a rustic cottage. But perhaps beside it are lines hanging full of clothes, drying. This the eye passes over, and excuses in the scene itself; but the same feature introduced into any picture, photographic or otherwise, provokes inextinguishable laughter.

As the camera has not the painter's power of excluding or subduing intrusive objects, all the photographer can do it to endeavor so to select his point of view as to avoid them. This is a matter demanding the utmost pains and care, for after the view has been taken, it will sometimes be found that a change of position of even a few yards only would have made a material improvement, a discovery mortifying and annoying, and better avoided by a careful search beforehand.

Cast shadows are such as retain more or less of the objects that cast them, as distinguished from the more indefinite shadows which come from some less distinct source. Such shadows are often the source of exquisite beauty in landscapes. A level foreground of grass is apt to be flat and unmeaning; the shadow of a tree cast across it gives it at once life, character, relief.

A fine single tree or grove of trees lighted from the side affords a beautiful play of light and shade which disappears when the sun is in the line of view behind, or even approaches that direction.

An agreeable division of the foreground is a capital point in a landscape. It has been already remarked how much this is aided by shadows. Almost any characteristic and prominent object will have a good effect, logs, stones, and still more, rocks, bushes; anything that breaks the level and changes the lines also attracts and pleases the eye—not in itself, but in the general character that it imparts. It may generally be affirmed that scarcely anything can so much detract from the effect of a landscape as an unbroken foreground, level in form and uniform in light. Such a foreground will mar, if not destroy, the effect of the finest objects. The artistic photographer will always change his position to avoid such a foreground, or if he is tied down to a particular spot from some imperative cause, he will if possible have some object, such as a log, a large stone or a trunk of a tree, thrown where it will support his lines.

There is a great beauty in very trifling objects which many habitually overlook. Brushes and vines, rocks, stones, logs, often have elements of attraction that reveal themselves only by observation and cultivation. An artificial arrangement of such objects in the foreground of a photograph lends to it an inexpressible charm.

The distance should never find its place exactly in the middle of the picture, which by its disposition becomes divided, as it were, into two equal parts, to the complete destruction of its artistic character. In fact, no important object should be placed exactly in the centre of the picture, nor should any important object be placed exactly upon the middle line which divides a picture from top to bottom or from side to side. Its effect will be always better if it is distinctly removed from either of these lines.

A blank white sky disfigures a photograph and must be avoided if possible. Several alternatives present themselves, one or other of which should be adopted whenever possible. If large slow-moving clouds are present they may sometimes be caught, especially if the illumination of the landscape be good. But it is an excellent plan to cover as much as possible the sky with foliage or other objects; large trees in the foreground will aid this. Some landscape photographers who know the value of even a little shading to the sky, adopt regularly the following plan: When the printing is done they open one half of the back of the printing frame and bend the sky end of the print in a curve backwards and so hold it to the light; it thus becomes somewhat darkened, and by doing this skilfully the shading is regular.

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* The toning bath recommended by Anthony is made up of—

Water	5 ounces.	Solution C	1 ounce.
Solution A	1 ounce.	Solution D	½ ounce.
Solution B	1 ounce		

Add solution A just before you wish to use the toning bath. Test with blue litmus paper. If the paper turns red, add solution B until it returns to its blue color. Warm the toning bath until it feels slightly tepid.

Solution A is composed of water, 7½ ounces; chloride of gold, 15 grains.

Solution B is composed of water, 8 ounces; bicarbonate of soda, 1 ounce.

Solution C is composed of water, 8 ounces; acetate of soda, 400 grains.

Solution D is composed of water, 4 ounces; chloride of sodium, 160 grains.

MODELLING IN CLAY.

AN INTRODUCTION TO THE ART OF CARVING IN WOOD.

CONCLUSION.

THIS process of building-up should be carried on until the outside wall, which represents the surface of the board from which the design is to be carved, is as high as it is designed to make the bottom of the panel deep. When a leaf or a stem is raised to a proper height, smooth it up, giving it vertical sides and a flat top, as if it were intended to have it in this condition. The finish, indeed, should be as carefully imparted as if it were intended to leave it thus.

The beginner must go on with his work of blocking out and building up stems, branches, and leaves, until each portion has reached about the level which it is expected to have when finished. This general level of the surrounding border or framing of the pattern, and the design which is enclosed by it, represents the level or surface of the piece of wood from which the carving is to be made. With regard to the square edges which appear in every part of the design when it has been blocked out and built up, if the learner attempt to make them clean and sharp, an annoying difficulty will be met with in the "burr" which arises when the tool is moved along the edge of a stem or leaf. If this is removed by carrying the tool along the side, the burr makes its appearance at the top.

This results from making the strokes in a direction parallel to, or outward from, the edge of the clay. By making the strokes as shown in Fig. 13 this tendency to form a burr is entirely overcome; and as the tool cuts against a mass of clay, and inwards away from the edge, the cut is smooth, and the edge is left clean and sharp. Any attempt to get rid of the burr by bringing the tool over and along the side or top, as the case may be, will not result in the desired end, but only bring about a transference of the burr from side to top or from top to side, as it may happen. The only way in which a clear, sharp edge can be obtained is to move the tool diagonally along side or top in the direction shown by the arrows in a series of strokes.

The readers of these papers will be interested to know that the pattern which has been brought under their notice in this and the preceding paper was the first one given to a novice in the art; and as his work progressed, time was taken at each step to make the drawings directly from the model. When a difficulty was met with, a note was made, and a sketch also when necessary, to show how it could be avoided. It was for the purpose of making the process of building up, as well as taking down, perfectly familiar that this particular mode of producing the pattern was selected. It will be seen on an examination of Fig. 14, that it would have been as easy to have taken a sheet of clay, and pressed it down upon the slab, and then, by laying pieces of wood of the proper thickness upon or along each side, to have brought the whole mass to the required thickness by sweeping a straight-edge across the space, reducing the surface to one level throughout. On a sheet thus obtained the pattern might be traced with a point, and relief obtained by carving away the clay to the proper depth. For the beginner this only gives half of the lesson, omitting a very important part for the woodworker, who gets ample practice in the cutting away part of the art, but very little indeed in the building up.

The pattern is now in a state not very unlike that in

which it would have been left by a scroll-saw working on a piece of wood. Every part is roughly finished to a rectangular section.

When the clay model has reached the stage shown in Fig. 14, it is perhaps in the most interesting condition. Then the wood-worker finds himself face to face with the difficulty which he will meet with when beginning to carve. How shall the surface be formed? What parts shall be in relief, and what sunken? Here it is that the plastic clay invites the workman to do just as fancy or whim may dictate, without prejudice to any work that may follow. If, for the sake of seeing how it will look, he wishes to roll a corner of a leaf back, or to place a wrinkle across it, the leaf can be rolled or the wrinkle made, and the model restored to its original state by a very little work. The surface can be built up, taken down, curved this way and that at pleasure. For the building up, clay is added; in cutting down, the tools with cutting edges are usually most convenient.

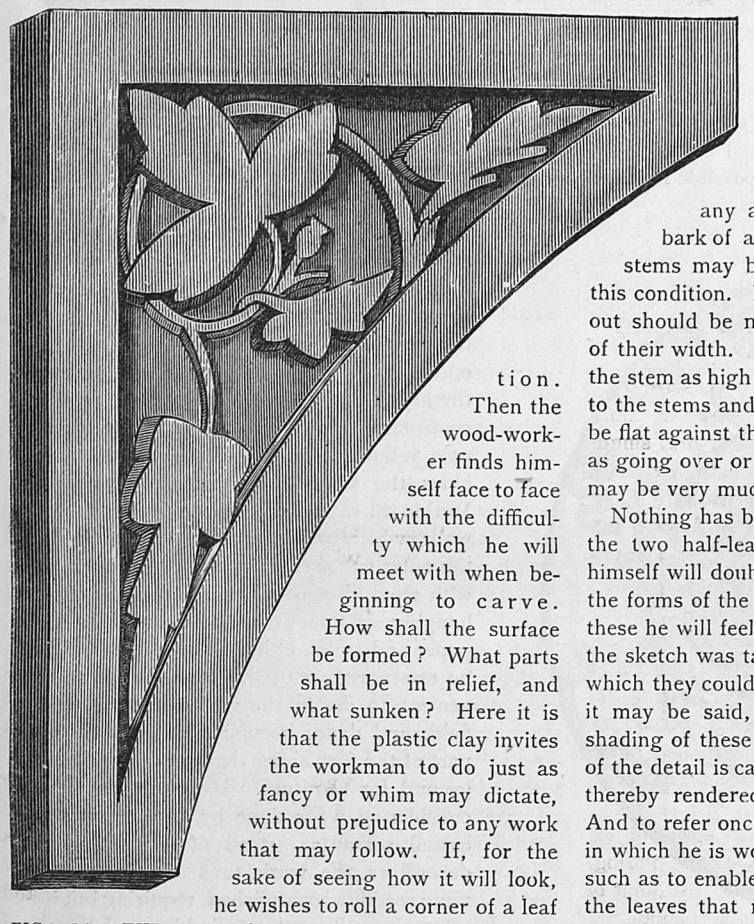

FIG. 14. THE CLAY MODEL BLOCKED OUT.

Returning to the model in the state shown in Fig. 14, and taking the largest leaf, we find upon examination that each of the three lobes into which it is divided is resting upon the branch from which the stem or leaf-stalk grows. Each of the lobes, therefore, will naturally be elevated higher at these points than at any others. Here, then, is a starting-point. Taking this as a basis, the beginner will find that he can profitably spend a long time over this one leaf, modelling its surface either in convex or hollow forms, and at the same time keeping those portions elevated under which the stems pass. As it is easy to make experiments of all kinds, he may also try the effect of raising the centre of the leaf and depressing the portions which are shown as elevations in the cut. The edges of division or separation between the parts of this leaf are shown as raised, or slightly curled outwards, in Fig. 15, which should be compared carefully in all its parts and details with the same parts as figured in Fig. 14. This slight curl outwards, or raising of the edge, makes the edge of the leaf thicker than the centre. To find out why this is done, let the beginner build up the centre of the leaf until it is higher than any other portion, and then make it curve away downward to the edges. Taking the long narrow leaf in the lower corner, he will find that it commences low, and then rises into a wave which extends diagonally across the leaf. This is followed by depression, which is also diagonal. Let him try the experiment of making these waves go squarely across the leaf.

The student will find, after he has changed his model in the ways suggested, that a leaf built up in the centre with low margins has a very heavy, solid look. It catches a great mass of light, and has the effect rather of a solid ball than of a leaf. With the waves going squarely across the long leaf, it will be found that the effect is that of a ribbon; and, turning to nature, to see how her leaf-surfaces are waved, it will be found that they are rarely or never straight across the leaf, as in the clay. It is necessary to observe that in thus working with the clay to get the best form, no finish must be attempted. The most that can be allowed is a line drawn with the blade of a tool, to locate the position of the midrib of the leaf.

In nature the stems of leaves and the branches of plants have the greatest variety of section, and by studying them we may find very beautiful models. In the example given the most that it has been attempted to do is to indicate rudely an approach to a circle. In the larger stem some slight roughness of bark may be given, but on no account should any attempt be made to copy the stem or bark of a shrub closely or exactly. At first the stems may be roughly rounded at top and left in this condition. For a good effect the stems in blocking out should be made of a height at least three-fourths of their width. A better proportion would be to have the stem as high as it is wide. This, of course, applies to the stems and branches where they are supposed to be flat against the ground. When they are represented as going over or under another stem these proportions may be very much varied.

Nothing has been said about the method of finishing the two half-leaves, because the student working by himself will doubtless find his hands full in modelling the forms of the leaves, and when he comes to finish these he will feel as the student did from whose work the sketch was taken—that there was but one way in which they could be put in to look well. This one way, it may be said, is suggested plainly enough by the shading of these leaves in Fig. 14, in which every part of the detail is carefully and sufficiently worked out, and thereby rendered amply suggestive to the amateur. And to refer once more to the character of the material in which he is working, the plastic nature of the clay is such as to enable him to try any method of fashioning the leaves that may occur to him, and to alter them again and again until he is satisfied with what he has accomplished.

The beginner may be content to go on for some little time without attempting to put on a finish. If his work is rough, no matter. Remember that the chief and great object of all that has been already advanced is to teach form, and enable the imagination to comprehend ornamental form in relief. When this has been done the main purpose for which the learner has taken up modelling in clay will be accomplished. There is another reason which should be kept in mind. Without a teacher to explain all the little artifices by which a smooth surface or perfect detail is obtained, no little practice is necessary. The variations in the condition of the clay can be learned from experience, but they are not easily explained on paper. If the beginner will content himself with working for a time in the rough, he will soon find himself sufficiently master of the materials to attempt smoothing up and giving a sufficient finish to make it worth while to take a cast, and so keep a permanent record of what he has done. In order that he may have as little trouble as possible in carrying out his work, he should attend to the following items in regard to the management of his material:

Do not, on any account, hold a piece of clay too long in the hand. It soon becomes warm, and the consequence is that the moisture will rapidly evaporate from it, leaving the clay too dry to be worked properly. This should be noted, and the piece in the fingers frequently changed, throwing that which has become too dry, and which has, in consequence, hardened, back into the bowl or box in which the supply is kept.

Clay absorbs water with great rapidity, and in very considerable quantities. During the progress of the work the beginner must be constantly on his guard to have water enough, and, at the same time, not too much. The consistency of soft putty is what should be aimed at, and this will be a good guide for the amateur in keeping his material fit for manipulation and in thorough working order. There is this difference, however: soft putty when worked about in the hand, in fastening in a pane of glass, gets sticky and clings to the fingers, small portions breaking away from the main mass, but clay will not do this, as it is more truly cohesive than putty. It will soil the fingers, but when of a suitable consistency for working it will not stick to them.

When beginning any piece of work, the clay may be used in a much softer condition than is necessary as the work progresses. After the first stage, the clay that is applied to the work should be softer than the work itself. It then stays in place better, and does not disturb the mass. When laid on wet, the absorption of the water by the drier clay below brings the two portions closely into contact, and makes a solid joint.

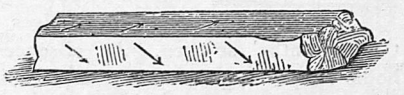

FIG. 13. DIAGRAM SHOWING DIRECTION OF STROKES TO AVOID BURR ON EDGE OF CLAY.

The clay can best be kept in a wooden pail with a tight cover. When set aside for a time, the clay must be sprinkled with water, and a wet cloth thrown in on top of it, to prevent the moisture from evaporating. While at work, especially in a warm room, it may need frequent sprinkling in order to keep it in good working condition. As the clay has a constant tendency to grow drier by the evaporation of moisture, it is desirable after it has been standing for some days, to knead it thoroughly before beginning work, so that all portions may be of the same consistency. Other things being equal, a light-colored clay is better than one of a darker tint, because it brings out the light and shade of the work better.

When the work has been under way for some time, and is considerably hardened, so as to be somewhat firm to the fingers, it can be finished much better than when it is in the soft and plastic condition so desirable, and, indeed, so necessary, at the commencement. Moist clay is not entirely plastic, though it seems so at first touch. In working the clay after the model has been blocked out, the amateur must not attempt any alteration of form by pressure. He must not try to make a hollow by pressing the finger into the mass, or to make an elevation by squeezing the materials up. Any attempt to work in this way invariably results in the distortion of the neighboring parts. When hollows are required, the clay should be cut out; and when a projection or elevation is wanted, it should be obtained by building it up with new material. If the clay that is added is a little softer than that on which it is placed, there will be no danger of disturbing the surrounding portions of the work. Careful attention to this rule will save a great deal of annoyance and unnecessary labor after a subject is well advanced.

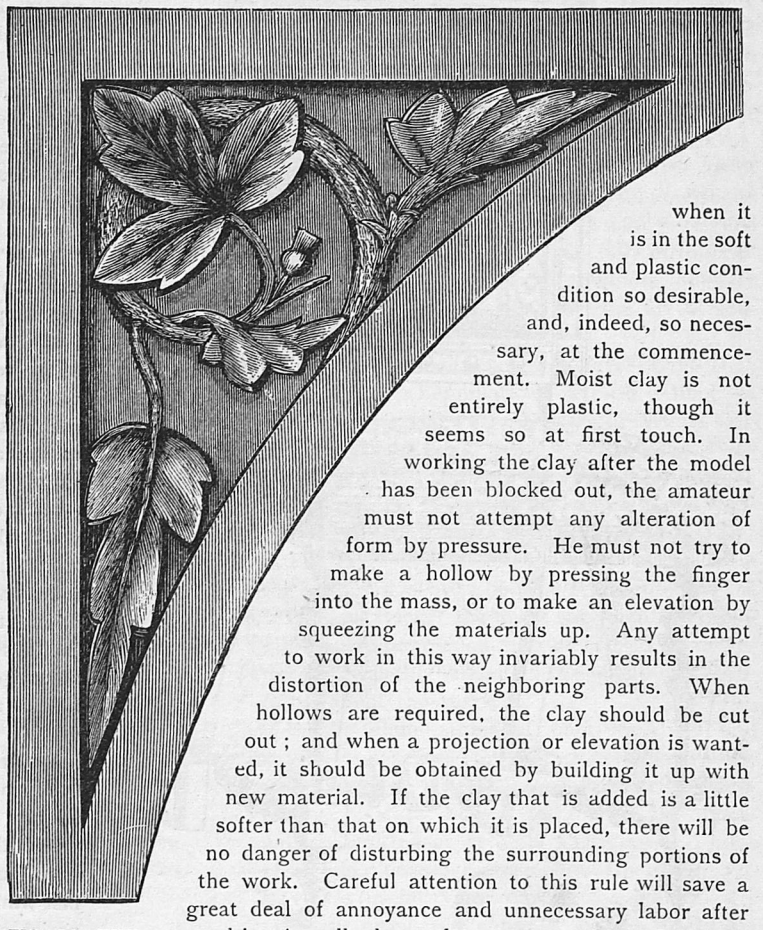

FIG. 15. THE SKETCH IN CLAY.

In conclusion, it may be observed that the amateur will be struck with the fact that the design we have given appears far more elaborate and rich in the solid than it looks on paper. Though it seems plain here, it will be found pleasing in the clay to an extent little anticipated.